



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,960	02/14/2001	Martin Hartung	1860/49624	9752

7590 07/07/2003

CROWELL & MORING LLP  
INTELLECTUAL PROPERTY GROUP  
P.O. BOX 14300  
WASHINGTON, DC 20044-4300

EXAMINER

LEE, JOHN D

ART UNIT	PAPER NUMBER
----------	--------------

2874

DATE MAILED: 07/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/781,960	Applicant(s) HARTUNG, MARTIN	
	Examiner John D. Lee	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 May 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 and 31-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-34 is/are allowed.
- 6) ☒ Claim(s) 1-28, 35 and 36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
     a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

This Office action is responsive to the amendment filed on May 28, 2003. With the addition of new claims 35 and 36, claims 1-28 and 31-36 are now pending. The previously applied 35 U.S.C. § 112, second paragraph, rejection of claim 14 has been obviated and is hereby withdrawn.

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 35 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This newly presented claim refers to the "system according to claim 31" when claim 31 defines a *process*. The claim is thus indefinite. It is believed that claim 35 is actually intended to depend from claim 32 (note page 9 of the amendment).

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-28 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,504,301 to Lowery in view of U.S. Patent 6,333,943 to Yamamoto et al. Applicant's claimed assembly constitutes a light wave converter in combination with a light guide, wherein the light wave converter exhibits a converter substance which converts a part of incident light into light of a longer wavelength, the converted light

being guided together with a portion of the unconverted light to an output, where such mixed light yields "white light". Lowery discloses the same light wave converter principle, albeit without an associated light guide. In column 6, lines 6-32, Lowery discloses a fluorescent plate to which is input blue light (wavelength of 460-480 nm) and which converts the blue light to light of a longer wavelength (approximately 520 nm) through luminescence/fluorescence, the combination of the converted emission together with the remaining blue light (i.e. the unconverted blue light) creates a final output with "color rendering that duplicates natural white light" (column 6, lines 31-32). Lowery thus discloses the gist of applicant's claimed invention. In applicant's claims, it is noted that the "light guide" is simply an added element; there is no claimed functionality for the light guide with respect to the light wave converter element. The use of light wave converter elements in association with optical light guides is well known, as shown by Yamamoto et al in figures 26 and 33. It would therefore have been obvious, to a person of ordinary skill in the art at the time of applicant's invention, to have included a light guide in combination with the light wave converter of Lowery, since Lowery's light source could clearly be used as a source transmitted through light guides for many applications. Note that the wavelength range of the incident light in Lowery (460-480 nm) is right in the middle of applicant's claimed range. There are no bandpass filters or brightness controllers disclosed in Lowery, but these are add-on elements that are used to tailor an optical output for a particular application. As such, their addition to the Lowery/Yamamoto et al device would have been obvious. The LED which serves as the source of incident light in Lowery could be termed a "polymerization lamp"

(Examiner's note" since "polymerization lamp" is not an art-recognized term, it is assumed that this is merely a light source that emits at a wavelength ordinarily used to polymerize organic compounds). Notice that the fluorescing wavelength-converting substances used in Lowery include lanthanide elements (e.g. Gd and Ce). The light guides shown in Yamamoto et al (figures 26 and 33) are certainly flexible, but the size of any exit port thereof is not disclosed. Applicant's claimed size (1 to 10 mm) is typical, however, and choice of such a size for any exit ports of the Yamamoto et al light guides would have been obvious. There would clearly be a "coupling" involved at the point where the proposed light wave converter and light guide meet. The weight percentages of the fluorescing substances (dopants) in Lowery are not specified, but would clearly be of such value to provide good wavelength conversion. The percentage range set forth by applicant in claim 25 would thus have been obvious in Lowery. Characterization of the claimed assembly as a "hot steam sterilized assembly" does not alter its claimed structural elements; this is rather a process-like limitation that refers to something that is done to the assembly of elements. Such a limitation thus has no bearing on the patentability of the claimed assembly, and to characterize the Lowery/Yamamoto et al assembly as a "hot steam sterilized assembly" would certainly be obvious. If a "polymerization lamp" were used as the source of incident light in Lowery, the proposed device of Lowery/Yamamoto et al could, by definition, be a "module" of such lamp.

Claims 31-34 are allowable over the prior art of record. These claims represent a *dental process* and a *dental photopolymerization system* which are neither disclosed

nor suggested by the prior art of record. In particular, illuminating or transilluminating of hard tooth substances would not have been obvious from Lowery, Yamamoto et al, or any other prior art of record.

Applicant's arguments filed on May 28, 2003, with respect to claims 1-28 and 36, have been fully considered but they are not deemed to be persuasive. Applicant has amended independent claim 1 to include the limitation that the light wave converter is a plate which is placed adjacent one end of the light guide. As noted by applicant, the Examiner indicated (during the interview conducted on January 17, 2003) that this feature distinguished the claimed invention from United States Patent 4,884,860 to Brown. Brown, however, was withdrawn as a reference in the previous Office action for other reasons and the impact of the newly added limitation as to patentable distinction with Lowery and Yamamoto et al (now relied on in the rejection) was never considered. After careful consideration, though, the Examiner deems that this newly added limitation **does not** patentably distinguish the claims from Lowery and Yamamoto et al. The light wave converter of Lowery is clearly in the form of a plate, and the Examiner's reliance on the teaching of Yamamoto et al to establish the obviousness of using an optical light guide in combination with the light wave converter of Lowery was based on Figures 26 and 33 of Lowery, which Figures clearly show one end of the light guide to be located adjacent the light wave converter. Therefore, in addition to the above-identified reasons for the obviousness of combining the teachings of Lowery and Yamamoto et al, to have the light wave converter be in the form of a plate which is placed adjacent one end of the light guide, would clearly have been obvious to a person of ordinary skill in the art.

It is noted that applicant has not disputed the other points set forth by the Examiner in the statement of rejection (above).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and an advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (703) 308-4886. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team 2) at telephone number (703) 308-3072, or to the Technology Center 2800 Customer Service Office at telephone number (703) 306-3329.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**